ExxonMobil Oxygenate Program

Submission to CARB Predictive Model Database

May, 2006

ExxonMobil
Research and Engineering

LEV/ULEV Gasoline Oxygenate Study

- **Objective: Measure emission effects of oxygen from MTBE and ethanol on LEV and ULEV emissions**
- **Conducted at Mobil Paulsboro Lab in 1999**

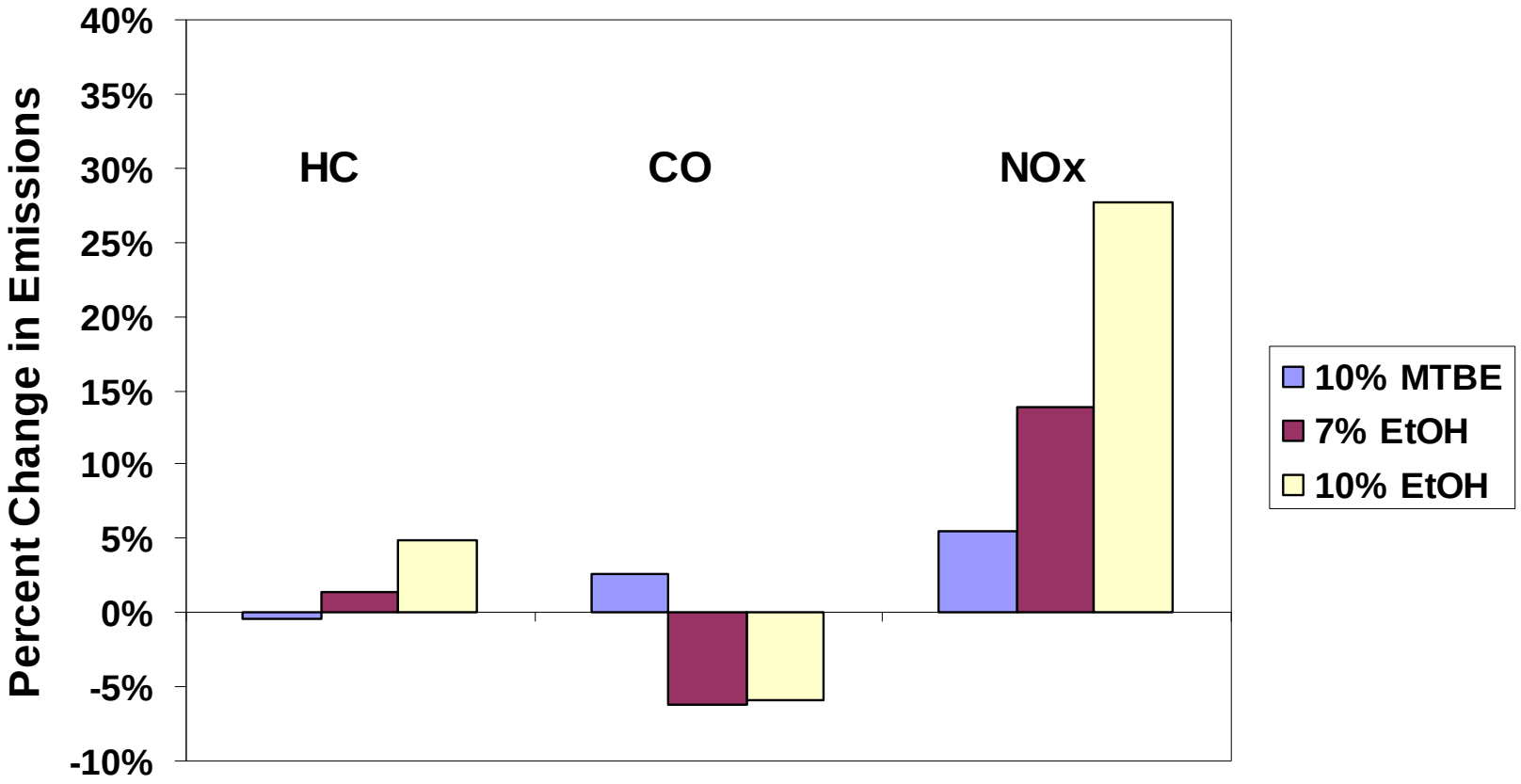
Test Vehicles: LEV/ULEV Oxygenate Study

Make/Model	Standard	Engine	Fuel System
Dodge Stratus	LEV	2.4L	MFI
Chev. Malibu	LEV	3.1L	PFI
Mazda Protege	ULEV	1.6L	MPF
Ford Crown Victoria	LEV	4.6L	SFI
Honda Accord	ULEV	2.3L	MFI

Test Fuels: LEV/ULEV Oxygenate Study

	M1	M2	M3	M4
RVP, psi	6.5	6.4	7.3	7.2
Ethanol, %	0	0	7	10
MTBE, %	0	10	0	0
T10, F	145	143	131	135
T50, F	192	191	198	203
T90, F	279	272	274	282
Sulfur, ppm	<10	<10	<10	<10
Aromatics, vol%	21	21	21	21
Olefins, vol%	<1	<1	<1	<1

Fleet Average Emissions



NOx effects for ethanol blends were statistically significant at 90% level